

## Generators, Light Towers, Compressors, and Heaters

Used Compressors Mesa - Air compressors are popular equipment that stores pressurized air by transferring power into potential energy. Air compressors use diesel, gasoline or electric motors, forcing air into a storage tank to pressurize it. Once the tank reaches its' upper limit, the air compressor turns off, as the compressed air is held into the tank until needed. There are many applications that require compressed air. Once the kinetic energy in the air tank is used up, the tank undergoes depressurization. Once the lower limit is reached, the air compressor turns on again to start the pressurization process again.

**Positive Displacement Air Compressors** There are different ways to compress air. They are divided into roto-dynamic or positive-displacement categories. With positive-displacement models, compressors force air into a chamber that has decreased volume in order to compress the air. A port or valve opens one maximum air pressure is achieved. Next, the air is discharged from the compression chamber into the outlet system. Popular types of positive-displacement compressors include Piston-Type, Rotary Screw Compressors and Vane Compressors.

**Dynamic Displacement Air Compressors** Axial compressors and centrifugal air compressors fall under the dynamic displacement air compressors. These units rely on a rotating component to discharge the kinetic energy and transform it into pressure energy. A spinning impeller generates centrifugal force, accelerating and decelerating contained air, creating pressurization. Air compressors create heat and need a method to dispose of the heat, typically with some kind of water or air cooling mechanism. Changes in the atmosphere play a role in compressor cooling. Many factors need to be considered for this kind of equipment including the power available from the compressor, inlet temperature, the location of application and ambient temperature.

**Air Compressor Applications** There are many uses for air compressors and they are used frequently in a variety of industries. Air compressors are used to provide pneumatic power to equipment such as air tools and jackhammers, to fill tires with air, to supply clean air with moderate pressure to divers and much more. There are many industrial applications that rely on moderate air pressure.

**Types of Air Compressors** The majority of air compressors are either the rotary screw type, the rotary vane model or the reciprocating piston type. These types of air compressors are favored for portable and smaller applications.

**Air Compressor Pumps** Oil-injected and oil-less are two specific types of air-compressor pumps. The oil-free system is more expensive compared to oil-lubed systems and they last less time. The system that functions without oil has been recognized with delivering better quality.

**Power Sources** Air compressors can be utilized with many different power sources. The most popular models are diesel-powered, gas and electric air compressors. Additional models are available on the market that have been built to use hydraulic ports or engines that are commonly utilized by mobile units and rely on power-take-off. Isolated work sites with limited electricity commonly use diesel and gas-powered machines. They need adequate ventilation for their gas exhaust and are quite noisy. Indoor applications including warehouses, production facilities, garages and workshops that offer easy access to electricity typically rely on electric-powered air compressors.

**Rotary-Screw Compressor** One of the most popular air compressors available is the rotary-screw model. A rotary-type, positive-displacement mechanism is what this type of gas compressor relies on. These units are commonly used in industrial settings to replace piston compressors for jobs that require high-pressure air. High-power air tools and impact wrenches are popular. Gas compression of a rotary-screw compressor offers a sweeping motion. This creates less pulsation compared to piston model compressors which can result in a less productive flow. In the rotary-screw model, compressors rely on rotors to compress the gas. Dry-running rotary-screw models use timing gears. These components are responsible to make sure the female and male rotors operate in perfect alignment. There are oil-flooded rotary-screw compressors that rely on lubricating oils to fill the gaps between the rotors. This serves as a hydraulic seal while simultaneously transferring mechanical energy between the rotors. Entering at the suction portion, gas travels through the threads while the screws rotate; forcing the gas to pass through the compressor and exit through the screws ends.

Effectiveness and success are obtained when certain clearances are achieved with the sealing chamber of the helical rotors, the rotors and the compression cavities. High speeds and rotation are utilized to achieve harmony and minimize the ratio of leaky flow rate vs. effective flow rate. Many applications including food processing plants, automated manufacturing facilities and other industrial job sites rely on rotary-screw compressors. Other than fixed models, there are mobile units in tow behind trailers that run on diesel engines. Also known as “construction compressors,” portable compression systems are popular for sandblasting, industrial paint systems, construction crews, pneumatic pumps, riveting tools and more. Scroll Compressor

Compressing air or refrigerant is made possible with a scroll compressor. The scroll compressors are popular in air-conditioning equipment, supercharging vehicles and vacuum pumps. These compressors are used in a variety of places to replace reciprocating and traditional wobble-plate compressors. They are used in residential heat pumps, automotive air-conditioning units and other air-conditioning systems. Fluids including gases and liquids are pumped, compressed and pressurized with the dual interleaving scrolls on this compressor. One of the scrolls is usually in a fixed position and the other scroll orbits extensively with no rotation. This motion traps and pumps the fluid between the scrolls. The compression movement happens when the scrolls synchronously rotate with their rotation centers misaligned to create an orbiting motion. The Archimedean spiral is found in flexible tubing variations. It functions similarly to a tube of toothpaste and resembles a peristaltic pump. Lubricant-rich casings stop exterior abrasion from occurring. The lubricant also dispels heat. The peristaltic pump is a great solution since there are no moving items contacting the fluid. The lack of glands, seals and valves keeps them simple to operate and fairly inexpensive in terms of maintenance. Compared to additional pump items, this tube or hose piece is fairly low cost.